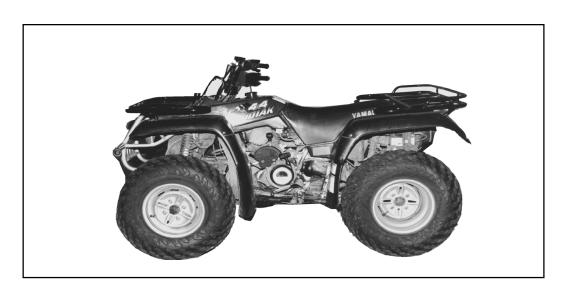


AIRDROP OF SUPPLIES AND EQUIPMENT:

RIGGING MOTORCYCLES AND QUAD-RUNNERS



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DEPARTMENT OF THE ARMY
DEPARTMENT OF THE AIR FORCE

CHANGE NO 1 Headquarters
Department of the Army
Department of the Air Force
Washington, DC, 1 January 2001

Airdrop of Supplies and Equipment: Rigging Motorcycles and Quad-Runners

This change adds the procedures for rigging the 250- to 300-cubic centimeter Kawasaki or equivalent motorcycles and the 350-cubic centimeter Yamaha four-wheeled quad-runner on a combat expendable platform for low-velocity airdrop.

FM 10-500-77/TO 13C7-55-1, 1 February 2000, is changed as follows:

- 1. New or changed material is identified by a vertical bar (■) in the margin opposite the changed material.
- 2. File this transmittal page in front of the publication
- 3. Remove old pages and insert new pages as indicated below:

Remove old pages	<u>Insert new pages</u>
Cover	Cover
i-iii	i-iv
1-0	1-0
	4-1 through 4-18
Glossary-1	Glossary-1
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C1, FM 10-500-77/TO 13C7-55-1 1 JANUARY 2001

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Airdrop of Supplies and Equipment: Rigging Motorcycles and Quad-Runners

Contents

	Page
PREFACE	iv
CHAPTER 1	INTRODUCTION
	Description of Items1-0 Special Considerations1-0
CHAPTER 2	RIGGING ONE MOTORCYCLE FOR LOW-VELOCITY AIRDROP
	Description of Load2-1 Building and Preparing Combat-
	Expendable Platform2-1 Preparing, Positioning, Protecting,
	and Securing Motorcycle2-3
	Stowing Cargo Parachutes2-7
	Marking Rigged Load2-8
	Equipment Required2-9
CHAPTER 3	RIGGING TWO MOTORCYCLES FOR LOW-VELOCITY AIRDROP
	Description of Load3-1
	Building and Preparing Combat-
	Expendable Platform3-1
	Positioning and Joining A-22 Sling
	Assamblies 3-3

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	Page
	Positioning A 22 Cores Covers
	Positioning A-22 Cargo Covers and Honeycomb3-5
	Preparing, Positioning, and
	Protecting Motorcycles3-6
	Closing Cargo Bags3-8
	Attaching Suspension Slings3-12
	Packing a 15-Foot Cargo
	Extraction Parachute3-13
	Preparing and Stowing a G-12D or G-12E Cargo
	Parachute and the 15-Foot Cargo Extraction
	Parachute3-19
	Marking Rigged Load3-20
	Equipment Required3-21
CHAPTER 4	RIGGING QUAD-RUNNERS FOR LOW-VELOCITY AIRDROP
Section I	RIGGING ONE FOUR WHEELED QUAD-RUNNER FOR LOW-VELOCITY AIRDROP
	Description of Load4-1
	Building and Preparing Combat-
	Expendable Platform4-1
	Installing Suspension Slings4-4
	<u> </u>
	Installing Load Restraints4-5
	Positioning Honeycomb Stacks4-6
	Preparing and Positioning Quad-Runner4-7
	Securing Load to Platform4-8
	Securing Accompanying Load4-9
	Safetying Suspension Slings4-10
	Stowing Cargo Parachute4-11
	Installing Parachute Release4-12
	Marking Rigged Load4-13
	Equipment Required4-14
Section II	RIGGING ONE FOUR WHEELED QUAD-RUNNER IN A DOUBLE A-22 CONTAINTER
	Description of Load4-16
	Building and Preparing Combat-
	Expendable Platform4-16
	Positioning and Joining A-22 Sling
	Assembly4-16
	Positioning A-22 Cargo Covers4-16
	Preparing and Positioning Honeycomb4-16
	Preparing, Positioning and Protecting Quad4-17
	Closing Cargo Bags4-17
	Attaching Suspension Slings4-17

	Page
Packing a 15-Foot	
Cargo Extraction Parachute	4-17
Preparing and Stowing G-12E Cargo Parach	nute and
15-Foot Cargo Extraction Parachute	4-17
Equipment Required	4-18
GLOSSARY	Glossary-1
REFERENCES	

Preface

Scope

This manual is designed for use by all parachute riggers. This manual shows and tells how to prepare and rig one or two 250- to 300-cubic centimeter Kawasaki or equivalent motorcycles and the 350-cubic centimeter Yamaha four wheeled quad-runner on a combat-expendable platform. They are rigged for low-velocity airdrop from a C-130, C-141, or C-17 aircraft.

User Information

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Chapter 1

Introduction

DESCRIPTION OF ITEMS

- 1-1. The description of the items covered in this manual is given below:
 - Each motorcycle is 32 inches wide, 49 inches high, and 88 inches long. They each weigh 275 pounds.
 - The four wheeled quad-runner is 45 inches wide, 65 inches high, 72 inches long and weighs 550 pounds.

SPECIAL CONSIDERATIONS

- 1-2. Special considerations for this manual are described below.
 - The loads covered in this manual may include hazardous materials as defined in AFJMAN 24-204/TM 38-250. If hazardous materials are included, they must be packaged, marked, and labeled as required by AFJMAN 24-204/TM 38-250.
 - A copy of this manual must be available to the joint airdrop inspectors during the before-and after-loading inspections.

Chapter 2

Rigging One Motorcycle For Low-Velocity Airdrop DESCRIPTION OF LOAD

2-1. The motorcycle is rigged on a 32- by 88-inch Combat Expendable Platform (CEP) with one G-14, or T-10C cargo parachute. The load is rigged for a low-velocity, over the ramp airdrop from a C-130, C-141 or C-17 aircraft.

BUILDING AND PREPARING COMBAT EXPENDABLE PLATFORM

2-2. Build a 32 by 88 inch CEP as shown in Figure 2-1.

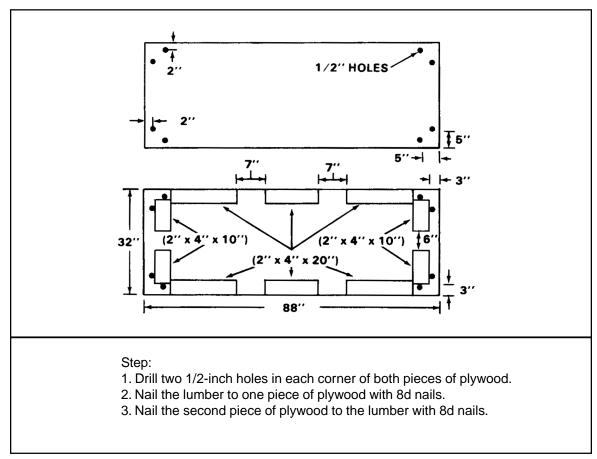
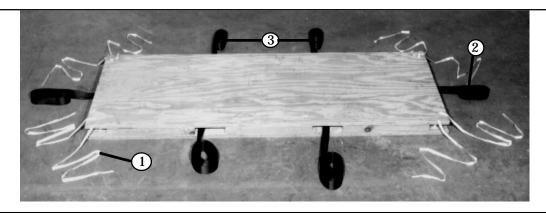


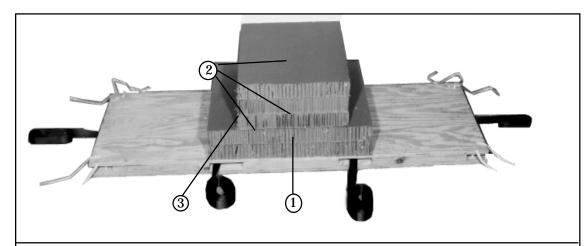
Figure 2-1. Construction Detail for Platform

- Prepare the platform as shown in Figure 2-2.
- Build a honeycomb stack and position it on the platform as shown in Figure 2-3.



- 1 Run an 18- foot length of 1/2-inch tubular nylon webbing through each pair of corner holes.
- 2 Run a 24- foot length of type X or XIII nylon webbing lengthwise through the platformand fit a D-ring to each end IAW FM 10-500-2.
- 3 Run two 18- foot lengths of type X or XIII nylon webbing crosswise through the platform.

Figure 2-2. Platform Prepared



- (1) Glue two 32- by 36-inch pieces of honeycomb together.
- ②Glue three 24- by 32-inch pieces of honeycomb together and glue the pieces to the top center 32- by 36-inch piece of honeycomb.
- (3) Center the honeycomb from front to rear on the platform and glue it in place.

Figure 2-3. Honeycomb Stack Placed on Platform

PREPARING, POSITIONING, PROTECTING, AND SECURING MOTORCYCLE

2-3. Prepare and position the motorcycle on the platform as shown in Figure 2-4.

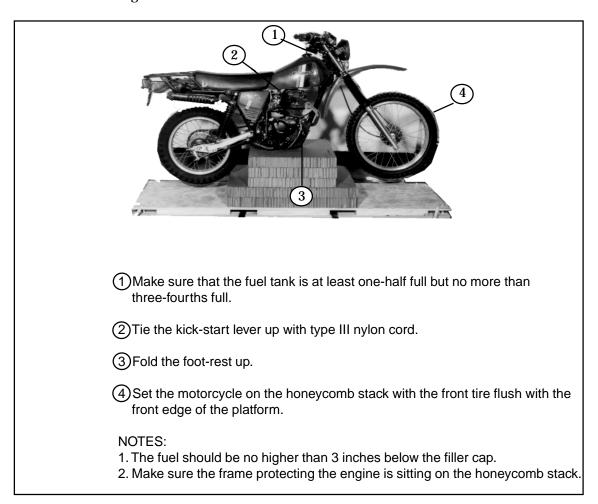
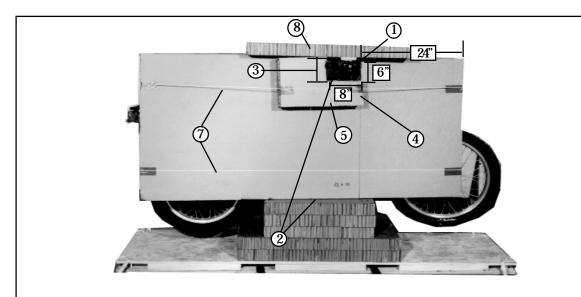


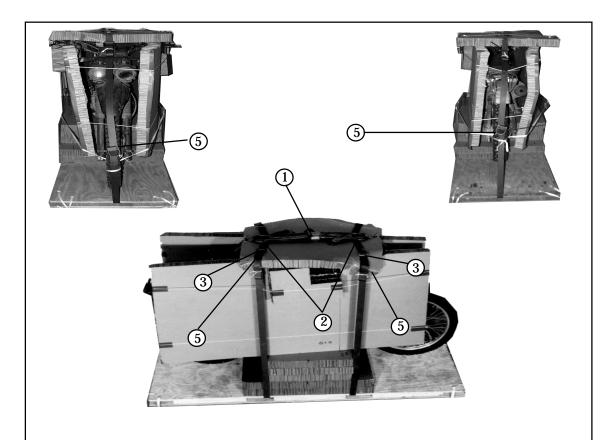
Figure 2-4. Motorcycle Prepared and Placed on Honeycomb

- Tie honeycomb protectors to the motorcycle as shown in Figure 2-5.
- Secure the motorcycle to the platform as shown in Figures 2-6 through 2-7.



- 1) Make a 6- by 8-inch cutout in the 72 inch edge of a 36- by 72-inch piece of honeycomb, 24 inches from the front edge.
- ②Set the protector on the right side of the motorcycle. Rest the bottom edge of the protector on the honeycomb stack. Align the cutout with the handlebar.
- (3) Cut a 6- by 8-inch piece of honeycomb from a corner of two 12- by 18- inch pieces of honeycomb per side.
- (4) Align the cutouts (protector) and glue the pieces together.
- (5) Place the 12- by 18-inch pieces of honeycomb to the rear of the cutouts.
- 6 Repeat steps 2 through 5 and set a second protector on the left side of the motorcycle (not shown).
- (7) Tie the protectors in place with lengths of type III nylon cord. Use tape on the protectors to keep the cord from cutting the protectors.
- 8 Lay a 32- by 36-inch piece of honeycomb on the protectors so that the 36-inch side of the honeycomb is parallel with the long side of the platform.

Figure 2-5. Honeycomb Protectors Prepared and Tied to Motorcycle

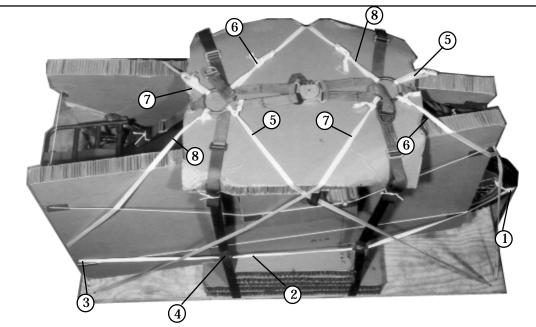


- (1) Lay the A-21 quick-release assembly on top of the honeycomb.
- (2) Fit the A-21 O-ring strap to both ends of the 24- foot strap.
- (3) Fit the A-21 quick-release strap on both ends of the 18- foot straps.
- 4 Adapt procedures in FM 10-500-3/TO 13C7-1-11 to close the A-21 sling assembly.
- (5) Pull the 18 and 24- foot straps taut, keeping the release box in the center of the honeycomb and allowing the honeycomb to bend under the straps. Ensure the D-ring on the 24 foot strap is 24 inches above the platform.
- 6) Fold the excess straps and tie the folds in place with 1/4inch cotton webbing. Tape may be used in place of the webbing.

NOTES:

- 1. The D-ring found on the 24- foot straps are for aircraft release gate.
- 2. Ensure the D-ring on the 24- foot straps remain 24 inches above the platform.

Figure 2-6. Motorcycle Secured to Platform



- 1) Run an additional 20-foot length of 1/2-inch tubular nylon webbing completely around the front tire and the 24-foot, type X nylon webbing. Safety the tubular nylon with a square knot.
- 2 Run the ends of the 1/2-inch tubular nylon webbing along each side of the load. Tie it to both 18-foot lengths of type X nylon webbing on each side of the load with a square knot.
- (3) Run the ends of the 1/2-inch tubular nylon webbing completely around the rear tire and the 24-foot, type X nylon webbing. Safety the tubular nylon with a square knot (not shown).
- (4) Tape the tubular nylon ties to the 18-foot, type X nylon webbing on each side of the load.
- (5) Pass one end of the right front skid board tie around the front wheel and tie it to the front steel ring. Tie the other end of the skid board tie to the rear steel ring.
- 6 Pass one end of the left front skid board tie around the front wheel and tie it to the front steel ring. Tie the other end of the skid board tie to the rear steel ring.
- (7) Tie one end of the right rear skid board tie to the front steel ring. Pass the other end of the skid board tie around the rear of the load and tie it to the rear steel ring.

Figure 2-7. Nylon Webbing Tied to Steel Rings

(8) Tie one end of the left rear skid board tie to the front steel ring. Pass the other end of the skid board tie around the rear of the load and tie it to the rear steel ring.

Figure 2-7. Nylon Webbing Tied to Steel Rings (Continued)

STOWING CARGO PARACHUTES

2-4. Select either a G-14 or T-10C cargo parachute. Attach a G-14 or T-10 cargo parachute to the load according to FM 10-500-3/TO 13C7-1-11. Secure the parachute to the load as shown in Figure 2-8.

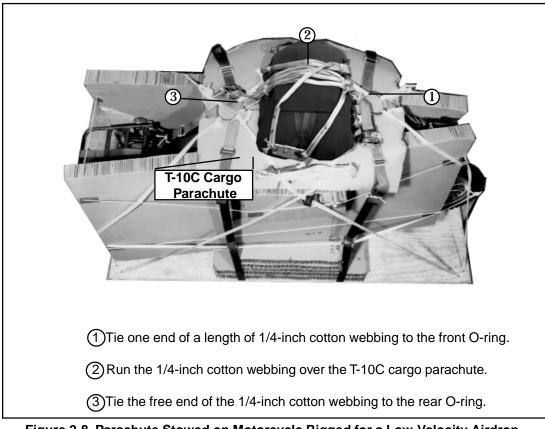


Figure 2-8. Parachute Stowed on Motorcycle Rigged for a Low-Velocity Airdrop

MARKING RIGGED LOAD

2-5. Complete Shipper's Declaration for Dangerous Goods and securely attach it to the load as shown in Figure 2-9. Indicate on the form that the fuel tank has been prepared in accordance with AFJMAN 24-204/TM 38-250. If the load varies, the weight, height, and parachute requirements must be recomputed.

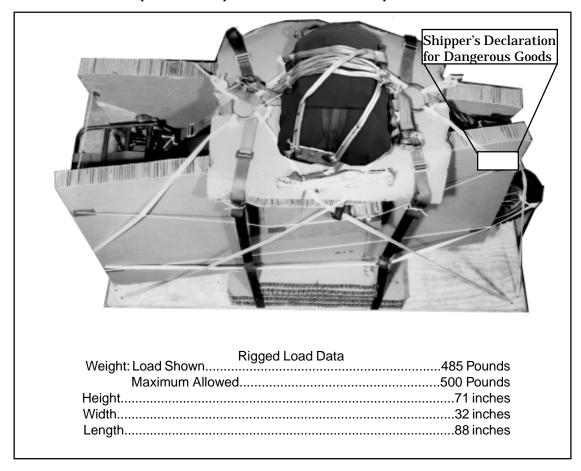


Figure 2-9. Motorcycle Rigged for Low-Velocity Airdrop

EQUIPMENT REQUIRED

2-6. The equipment needed to prepare and rig this load is listed in Table 2-1.

Table 2-1. Equipment Required for Rigging One Motorcycle for Low-Velocity Airdrop

National Stock Number	Item	Quantity
8040-00-273-8713	Adhesive Paste, 1-gal	As Required
5510-00-220-6146	Lumber:	
	2- by 4- by 10-inches	4
	2- by 4- by 20-inches	6
5315-00-010-4659	Nail, Steel Wire, Common, 8d	As Required
1670-00-753-3928	Pad, Energy-Dissipating Honeycomb,	
	3- by 36- by 96-inches	3 Sheets
	12- by 18-inch	(4)
	24- by 32-inch	(3)
	32- by 36-inch 36- by 72-inch	(3) (2)
	Parachute Cargo:	(2)
1670-00-999-2658	G-14 or	1
No NSN	T-10C	1
5530-00-128-4981	Plywood, 3/4- by 32- by 88-inch	2
1670-00-242-9173	A-21 Cargo Bag	1
	Strap:	
7510-00-266-5016	Tape, Adhesive, 2-inch	As Required
1670-00-568-3223	Retainer Band	As Required
0005 00 000 0444	Webbing:	A . D
8305-00-268-2411	Cotton, 80-lb	As Required
8305-00-268-2453 8305-00-261-8584	Nylon, Tubular, 1/2-inch, 1,000-lb	As Required
8305-00-260-4586	Nylon, Type X or Nylon, Type XIII	As Required As Required
5365-00-937-0147	D-Ring	As Nequileu 2
3000 00 307 0147	D Taily	

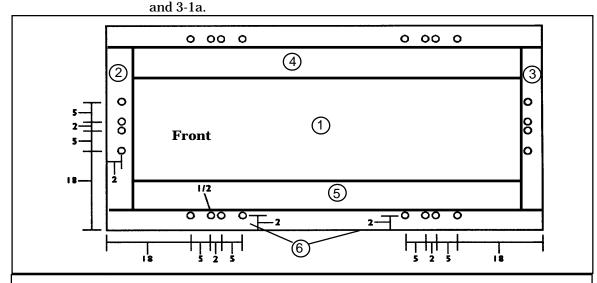
Chapter 3

Rigging Two Motorcycles For Low-Velocity Airdrop DESCRIPTION OF LOAD

3-1. Two motorcycles are rigged in two A-22 cargo bags on a 48- by 96-inch Combat Expendable Platform (CEP) with one G-12E cargo parachute. The load is rigged for low velocity, over the ramp airdrop from a C-130 aircraft. Each motorcycle is 35 inches wide, 49 inches high, and 88 inches long. Each weighs 275 pounds.

BUILDING AND PREPARING COMBAT EXPENDABLE PLATFORM

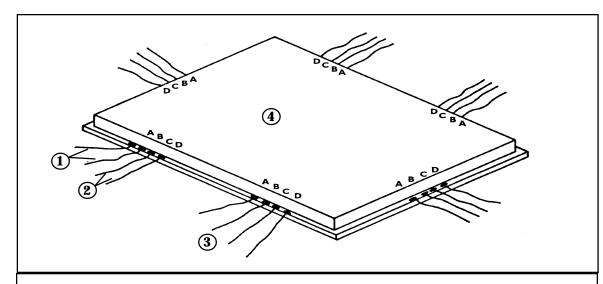
3-2. Build and prepare the 48- by 96- inch CEP as shown in Figures 3-1



Sten

- 1. Place a 3/4- by 48- by 96-inch sheet of plywood on a flat surface.
- 2. Nail a 2- by 6- by 42-inch piece of lumber on the front edge of the plywood 3-inches in from the 48-inch side.
- 3. Nail a 2- by 6- by 42-inch piece of lumber to the rear side the same as in step 2.
- 4. Nail a 2- by 6- by 85-inch piece of lumber to the right side of the plywood 3-inches in from the 48-inch side.
- 5. Nail a 2- by 6- by 85-inch piece of lumber to the left side the same as in step 4.
- 6. Drill twenty-four 1/2-inch holes as shown above.

Figure 3-1. Construction Detail for Platform



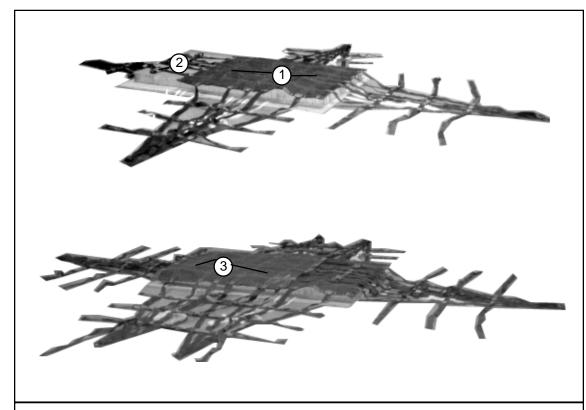
Step:

- 1. Cut twelve 8-foot lengths of 1/2-inch tubular nylon webbing. Route one end through hole A and hole B, from bottom to top.
- 2. Repeat step 1 for holes C and D.
- 3. Repeat steps 1 and 2 for the other five sets of holes.
- 4. Lay a 36- by 96- inch piece of honeycomb on the platform.

Figure 3-1a. Construction Detail for Platform

POSITIONING AND JOINING A-22 SLING ASSEMBLIES

3-3. Lay two A-22 cargo bag sling assemblies on the platform as shown in Figure 3-2, and join them together as shown in Figure 3-3.

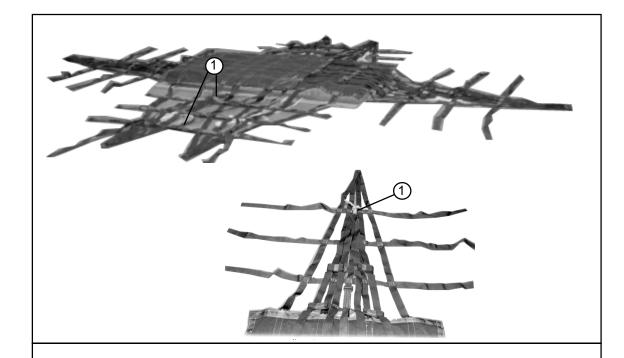


- 1 Place one A-22 sling assembly toward the front of the of honeycomb. Extend all lateral straps and support webbing. make sure the support web D-ring at the rear extends off the load.
- 2)Fold and place all lateral straps on top of the rear support web.
- 3 Place the second A-22 sling assembly to the rear. Position it in the same manner as the front assembly. Make sure the D-ring on the front support web extends off the load.

NOTES:

- 1. Be sure that the support web D-ring extends over the rear edge of the platform
- 2. Be sure that the support web D-ring of the top assembly extends over the front edge of the platform.

Figure 3-2. A-22 Sling Assemblies Placed on the Platform



- 1 Use a length of type VIII nylon webbing to tie the support web D-ring exposed at the front and rear of the load to the other A-22 sling assembly as shown.
- 2 Cut six lengths of type VIII nylon webbing. Route one length through each set of friction adapters at the midsection of the load as shown.

NOTE:

Do not pull the webbing taut at this time. They will be tightened and tied when the sling assemblies are closed.

Figure 3-3. A-22 Sling Assemblies Joined

POSITIONING A-22 CARGO COVERS AND HONEYCOMB

3-4. Lay two A-22 cargo bag covers on the sling assemblies. Set the honeycomb on the covers as shown in Figure 3-4.

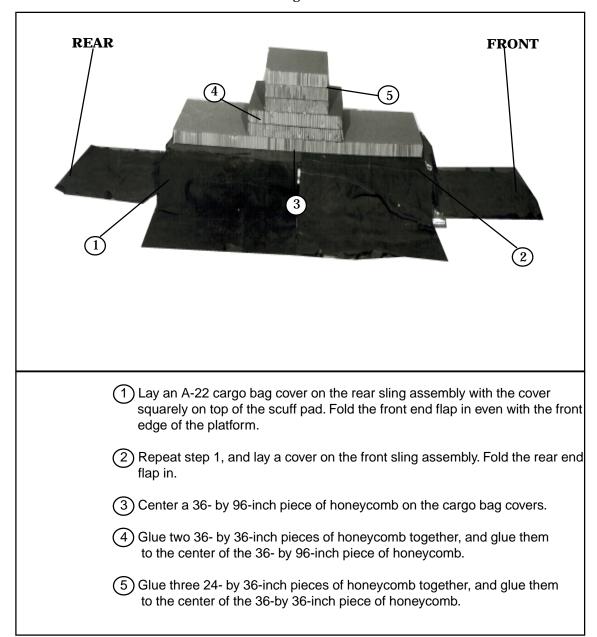
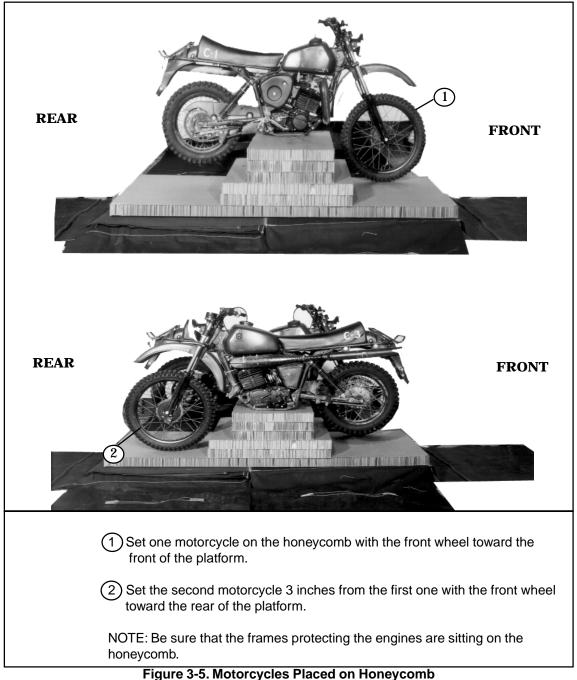


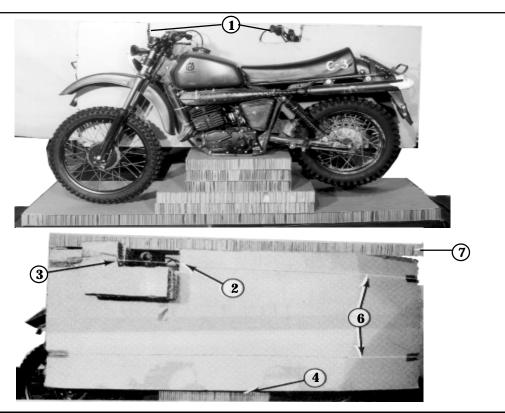
Figure 3-4. Cargo Covers and Honeycomb Positioned on Platform

PREPARING, POSITIONING AND PROTECTING MOTORCYCLES

3-5. Prepare the two motorcycles as outlined in Chapter 2. Set them on the honeycomb as shown in Figure 3-5.

• Tie honeycomb protectors to the motorcycles as shown in Figure 3-6.



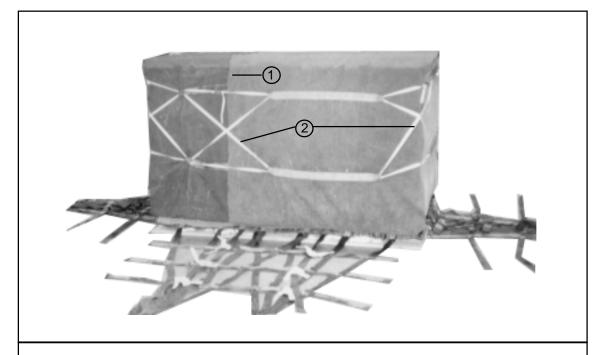


- 1 Make two 6- by 8-inch cutouts in one 84-inch edge of a 36- by 84-inch piece of honeycomb spaced for the handlebars of both motorcycles to fit in the cutouts. Rest the bottom of the protector on the honeycomb stack.
- 2 Make a 6- by 8-inch cutout in the 84-inch edge of a 36- by 84-inch piece of honeycomb, 30 inches from the rear edge of the honeycomb. Bend the honeycomb just to the rear of the cutout.
- 3 Cut a 6- by 8-inch piece from the corner of two 12- by 18-inch pieces of honeycomb. Align the cutouts, and glue the two pieces of honeycomb together.
- 4 Set the protector on the right side of the motorcycles. Rest the bottom edge of the protector on the honeycomb stack. Align the cutouts with the handles.
- (5) Repeat steps 2, 3, and 4, and set a second protector on the left side of the motorcycle (not shown). Make the cutout 30 inches from the front edge of the honeycomb protector.
- (6) Tie the protectors in place with lengths of type III nylon cord. Use tape on the protectors to keep the cord from cutting the protectors.
- (7) Lay a 24- by 84-inch honeycomb protector on top of the other protectors.

Figure 3-6. Honeycomb Protectors Prepared and Tied to Motorcycles

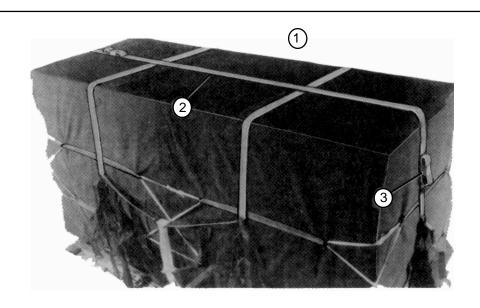
CLOSING CARGO BAG

3-6. Close the A-22 cargo bags as outlined in FM 10-500-3/TO 13C7-1-11 and with the exceptions shown in Figures 3-7 through 3-10.



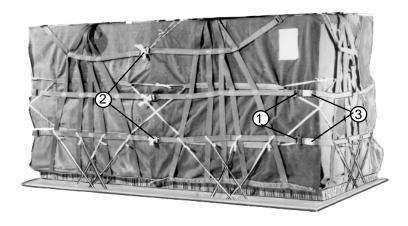
- 1) Fold the bag covers over the front and rear first, then the sides over the top. Fold under the excess side covers.
- 2 Use six lengths of 1/2-inch tubular nylon webbing to lace the bag closed. Pull the webbing tight and tie the running ends in a surgeon's knot and bow knot. Tape the excess and knot. Leave one running end slightly exposed to allow rapid derigging.

Figure 3-7. Cargo Bags Closed



- ① Run the side tie-down straps through the friction adapters. Apply tension to the straps.
- ② If necessary, attach a 36- or 60-inch type VIII nylon webbing strap to either the front or rear tie-down strap. If used, fold and tape or tie to the sling assembly. Route the running end through the friction adapter on the opposite end.
- (3) Fold the excess on the tie-down straps. Tape or tie it as shown.

Figure 3-8. Cargo Bags Tie-down Straps Secured

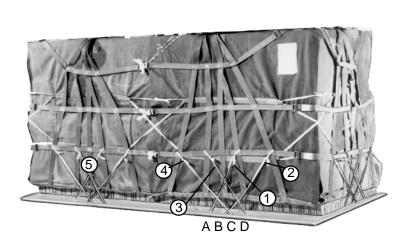


- 1 Lay the remaining portions of the sling assemblies over the load. Route the lateral straps through the friction adapters.
- ② Tighten the center friction adapters and type VIII nylon webbing so that the middle suspension web on each container is vertical. Install a knot in the running ends of the type VIII nylon webbing about 3 inches from the friction adapters.
- (3) Apply equal tension on the remaining lateral straps. Fold the excess and tape or tie it in place as shown.

NOTE:

If top lateral straps are on the top of the load, make sure they are tightened loosely.

Figure 3-9. Cargo Bags Lateral Straps Secured

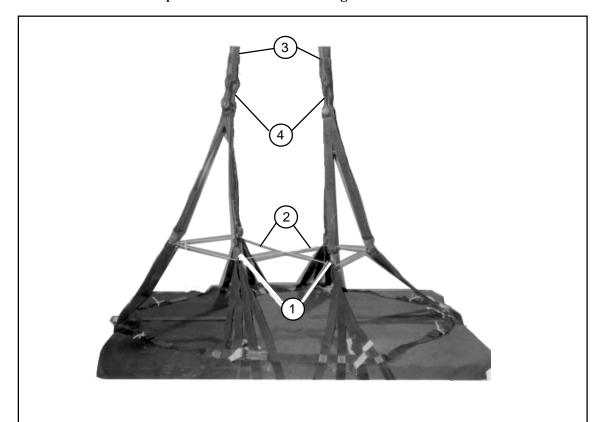


- 1 Starting at the front right side, take tie-down A and diagonally tie it around the intersection of the lower lateral and fourth support web. Use three halfhitch knots and an overhand knot in the running end.
- ② Route tie-down B around the fifth support web and lower lateral strap intersection diagonally. Pull the excess slack out, and tie it with a trucker's hitch knot and an overhand knot in the running end.
- 3 Repeat step 1 for tie-down D and secure it to the second intersection on the lower lateral strap.
- 4 Repeat step 2 for tie-down C and secure it to the first intersection on the lower lateral strap.
- (5) Repeat steps 1 through 4 for the other five sets of tie-downs.

Figure 3-10. Skid Board Ties Secured

ATTACHING SUSPENSION SLINGS

3-7. Fit a suspension web to each support web D-ring. Fit two 3-foot slings to the suspension webs as shown in Figure 3-11.



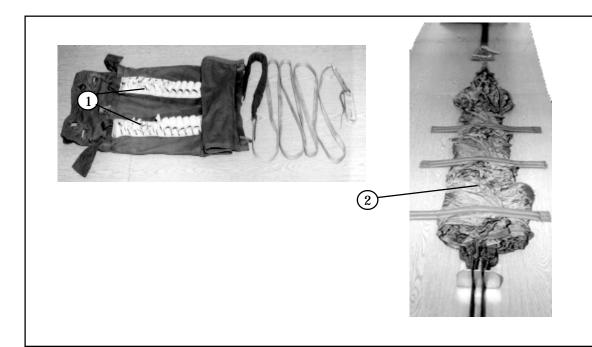
- 1 Snap a suspension web to each support web D-ring. Wrap the connector snaps with tape.
- 2 Run a length of type III nylon cord through the front support web D-rings. Cross the cord, and run it rearward through the rear support web D-rings. Tie the ends of the cord together with a surgeon's knot and a locking knot. Tie an overhand knot in each running end.
- (3) Fit two 3-foot (2-loop), type XXVI, nylon webbing slings to the bells of two cargo suspension clevis assemblies.
- 4 Bolt the front suspension web D-rings to one medium clevis and the rear D-ring to the other medium clevis.

Figure 3-11. Suspension Slings Installed

PACKING A 15-FOOT CARGO EXTRACTION PARACHUTE

3-8. Pack a 15-foot cargo extraction parachute as shown in Figures 3-12 through 3-17 using the following items:

- One T-10 deployment bag with static line.
- Retainer bands.
- 1/4 inch cotton webbing.
- Ticket number 5 cotton thread.
- Two medium cargo suspension clevises.
- For parachute with a 36-inch adapter web: One 9-foot (2-loop), type XXVI, nylon sling and one type IV connector link.
- For parachute without a 36-inch adapter web: One 12-foot (2-loop), type XXVI, nylon sling and one 60-inch nylon webbing strap (shear strap).

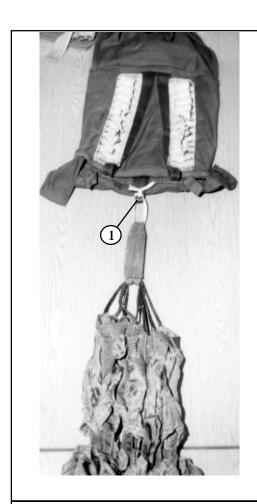


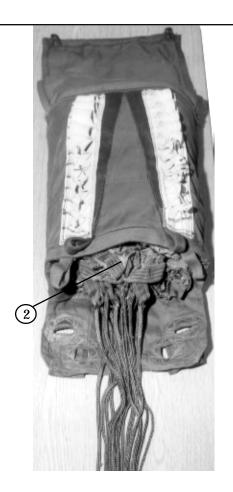
- 1 Attach retainer bands to the first eight stow loops on each side of the T-10 deployment bag.
- 2) Flat fold and long fold the canopy as outlined in TM 10-1670-278-23/ TO 13C5-26-2.

NOTE

If the standard 15-foot parachute deployment bag is attached to the parachute, remove the bag at the bag retaining line.

Figure 3-12. Retainer Bands Attached and Canopy Folded





- 1 Pass two lengths of 80-pound cotton webbing through the bridle loop of the canopy and through the bridle attaching loop of the deployment bag to form a 3-inch loop. Cross the ends of the webbing over the attaching loop, and tie them with a surgeon's knot and locking knot.
- 2 S-fold the canopy into the deployment bag starting in the upper right corner of the bag.

Figure 3-13. Deployment Bag Attached and Canopy Stowed

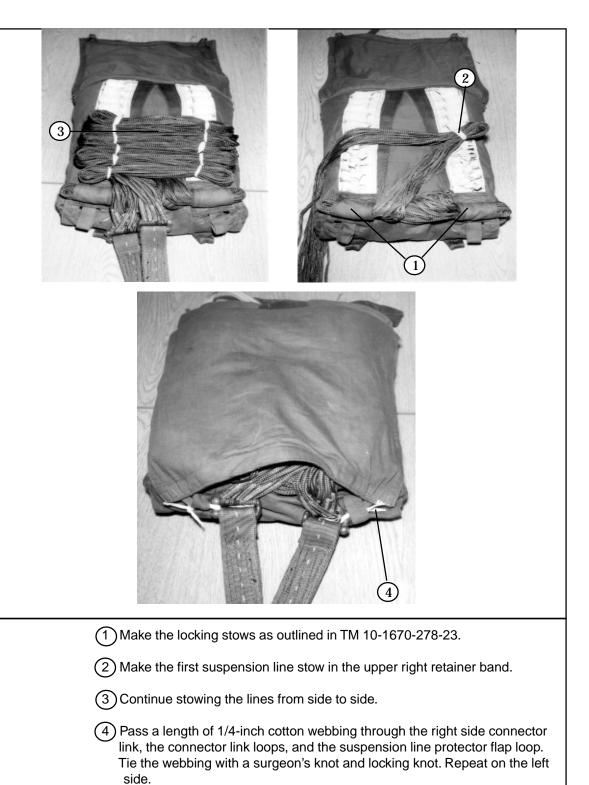
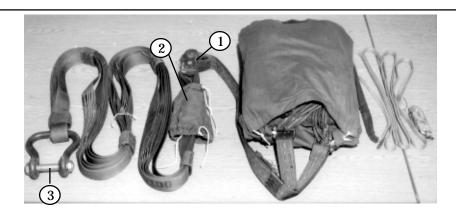
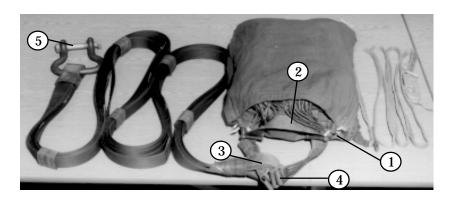


Figure 3-14. Locking and Suspension Line Stows Made and Connector Links Tied



- 1 Attach a type IV link assembly or medium clevis to the 36-inch adapter web.
- 2 Attach a 9-foot (2-loop), type XXVI, nylon webbing sling to the type IV link or medium clevis.
- 3 Bolt a medium suspension clevis (shown) or a type IV link assembly to the free end of the sling.

Figure 3-15. Deployment Line Installed on a 36-inch Adapter Web

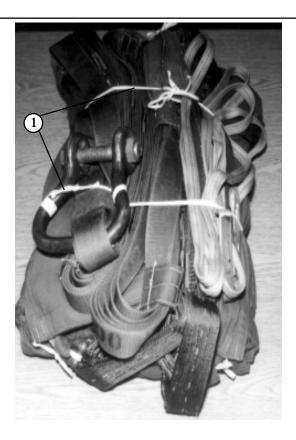


- 1 Secure the parachute connector links as shown in step 4.
- 2 Run one end of a 60-inch shear strap through both of the parachute connector links.
- 3 Run one end of the 60-inch shear strap through one end of a 12-foot (3-loop) type X, nylon sling.
- 4 Fasten the friction adapter, and adjust the shear strap to form a 12-inch loop. Tape the excess strap.
- (5) Bolt a medium suspension clevis (shown) or a type IV link assembly to the free end of the sling.

NOTE:

The above procedures are for a 15-foot cargo extraction parachute without a 36-inch adapter web.

Figure 3-16. Deployment Line Installed on a 60-inch Adapter Web

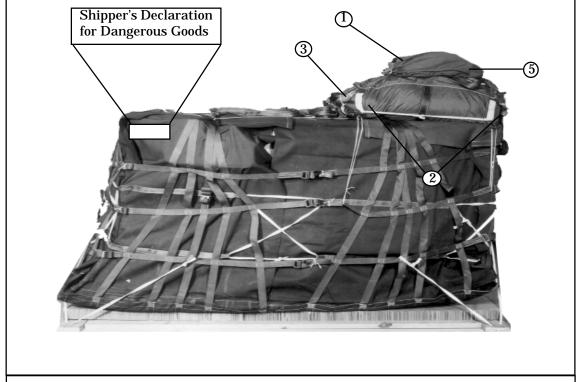


1 S-fold the deployment line and static line. Place them on top of the deployment bag. Secure them in place with two lengths of 1/4-inch cotton webbing wrapped around the lines and bag.

Figure 3-17. Cargo Extraction Parachute Packed in a T-10 Deployment Bag

PREPARING AND STOWING A G-12 CARGO PARACHUTE AND THE 15-FOOT CARGO EXTRACTION

3-9. Prepare a G-12 cargo parachute. Stow it and the 15-foot cargo extraction parachute on the load as shown in Figure 3-18.



- 1 Set the parachute on the front of the load with the riser compartment up and the deployment bag bridle to the front.
- (2) Tie the parachute in place with four lengths of 1/4-inch cotton webbing.
- (3) Bolt the 3-foot suspension slings to the parachute's riser clevis. Fold the slings, and tape or tie the folds in place.
- (4) Cut the secondary bag closing tie (not shown).
- (5) Set a 15-foot cargo extraction parachute, packed in a T-10C deployment bag, on the G-12 cargo parachute. Tie it in place with ticket number 5 or 8/7 cotton thread.
- 6 Attach the 9-foot sling clevis to the G-12 D-bag and tie a medium clevis with 1/4 inch cotton webbing to the D-bag.

Figure 3-18. Parachutes Stowed on Motorcycles Rigged for a Low-Velocity Airdrop

MARKING RIGGED LOAD

3-10. Complete Shipper's Declaration for Dangerous Goods and securely attach it to the load as shown in Figure 3-19. Indicate on the form that the fuel tank has been prepared in accordance with AFJMAN 24-204/TM 38-250. If the load varies, the weight, height, and parachute requirements must be recomputed.

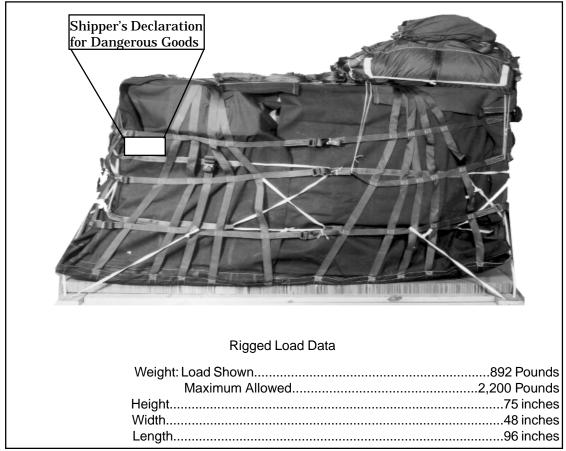


Figure 3-19. Motorcycles Rigged for Low-Velocity Airdrop

EQUIPMENT REQUIRED

3-9. The equipment needed to prepare and rig this load is listed in Table 3-1.

Table 3-1. Equipment Required for Rigging Two Motorcycles for Low-Velocity Airdrop

	quired for Rigging Iwo Motorcycles for Low	Velocity Allarop
National Stock Number	Item	Quantity
8040-00-273-8713	Adhesive, paste, 1-gal	as required
1670-00-587-3421	A-22 cargo bags	2
1670-01-248-9502	*Bag, deployment, personnel parachute, T-10C	1
1670-00-568-0323	*Band, rubber, retainer parachute	as required
4030-00-678-8562	Clevis assembly, suspension, cargo medium 3/4"	4
4020-00-240-2146	Cord, nylon, type III, 550-lb	as required
1670-00-783-5988	*Link assembly, type IV	1
5510-00-220-6148	Lumber: 2- by 6- by 48-in 2- by 6- by 85-in	2 2
5315-00-010-4659	Nail, steel wire, common, 8d	as required
1670-00-753-3928	Pad, energy-dissipating honeycomb, 3- by 36- by 96-in 12- by 18-in 24- by 36-in 24- by 84-in 36- by 36-in 36- by 84-in 36- by 96-in	7 sheets (4) (3) (1) (2) (3) (2)

^{*}These items are needed to pack the 15-foot cargo extraction parachute.

Table 3-1. Equipment Required for Rigging Two Motorcycles for Low-Velocity Airdrop (cont)

National Stock Number	Item	Quantity
1670-01-065-3755 1670-01-063-3715	Parachute: Cargo, G-12E *Cargo, extraction, 15-ft	1 1
5530-00-128-4981	Plywood, 3/4- by 48- by 96-in	2
1670-01-062-6301	Sling, cargo, airdrop, type XXVI, nylon webbing: 3-ft (2-loop)	2
1670-01-062-6304	*9-ft (2-loop)(deployment line)	1
1670-00-998-0117	Static line, cargo parachute, breakaway-type	1
7510-00-266-5016	Tape, adhesive, 2-in	as required
8310-00-917-3945	Thread, cotton, ticket Number 5	as required
8305-00-268-2411 8305-00-268-2453 8305-00-263-3591	Webbing: Cotton, 1/4-inch Nylon, tubular, 1/2-in, 1,000-lb Nylon, type VIII	as required as required as required

^{*}These items are needed to pack the 15-foot cargo extraction parachute.

Chapter 4

Rigging Quad-Runners For Low-Velocity Airdrop

SECTION I

RIGGING ONE FOUR WHEELED QUAD-RUNNER FOR LOW-VELOCITY AIRDROP

DESCRIPTION OF LOAD

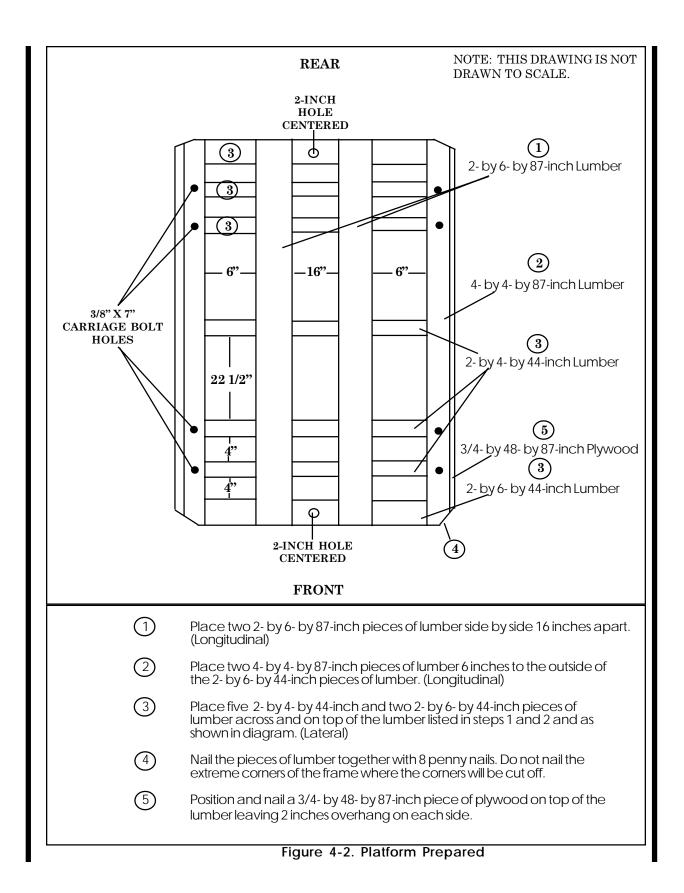
4-1. The four wheeled quad-runner (QUAD) is rigged on a 48-by 87-inch Combat Expendable Platform (CEP) with one G-12E cargo parachute. The load is rigged for a low velocity airdrop over the ramp of a C-130, C-141, or C-17 aircraft. The QUAD is 45 inches wide, 65 inches high, 72 inches long and weighs 550 pounds and is shown in Figure~4-1.

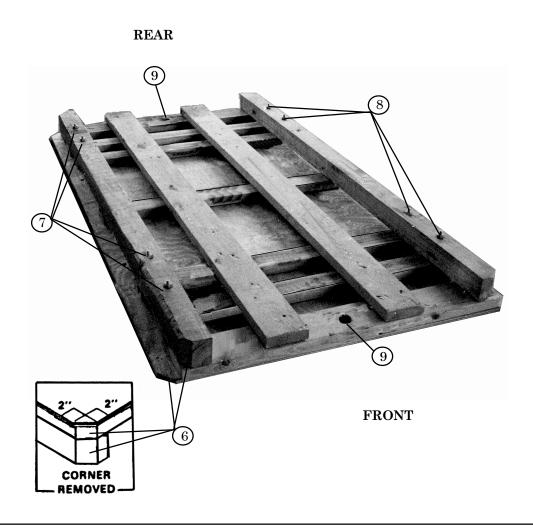
BUILDING AND PREPARING COMBAT-EXPENDABLE PLATFORM

4-2. Build and prepare the 48- by 87-inch CEP as shown in Figure 4-2.



Figure 4-1. Four Wheeled Quad-Runner (QUAD)





- 6 Cut the four corners of the plywood and 4- by 4- by 87-inch pieces of lumber at 45 degree angles (2- by 2-inch).
- 7) Drill eight 3/8-inch holes at the suspension sling points as shown. Ensure the holes pass through the plywood and each end of each 2- by 4- by 44-inch lateral stringer and the 4- by 4- by 87-inch longitudinal stringers.
- (8) Insert a 3/8- by 7-inch carriage bolt into each hole, and bolt each of the lateral stringers to the longitudinal stringers.

Note: Insert bolts from plywood deck side of platform and countersink carriage bolts head.

Oprill one 2 inch hole centered on 2-by 6-by 44-inch piece of lumber and plywood at each end of the platform.

Figure 4-2. Platform Prepared (Continued)

INSTALLING SUSPENSION SLINGS

4-3. Mark the center of two 20-foot, 2-loop suspension slings with tape. Route the slings through the suspension points of the platform with the tape at the center of the platform. Secure the slings to the platform as shown in *Figure 4-3*.

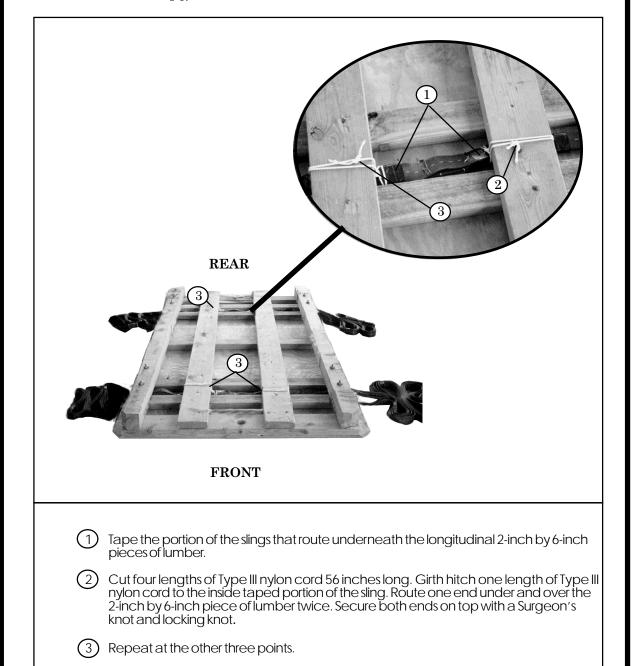
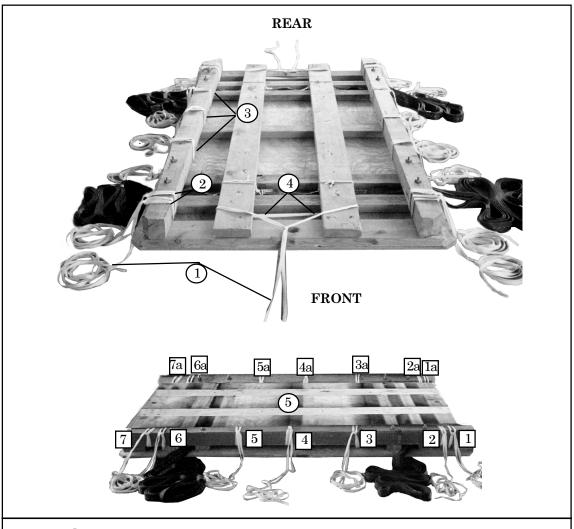


Figure 4-3. Suspension Slings Secured to Platform

INSTALLING LOAD RESTRAINTS

4-4. Install the load restraints as shown in *Figure 4-4*.

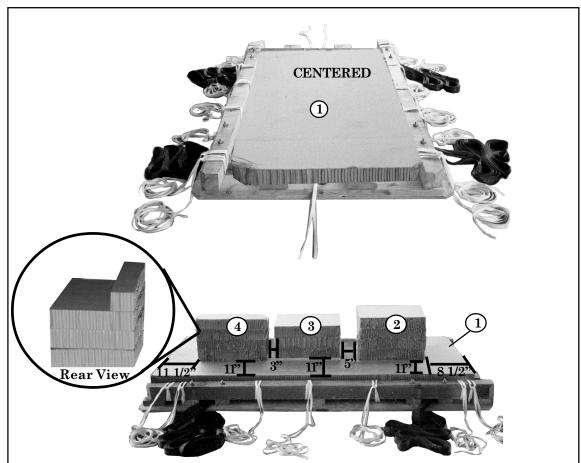


- ① Cut 16 lengths of 1/2-inch tubular nylon webbing 15 feet long.
- (2) Girth hitch two lengths at each end of the 4-inch by 4-inch pieces of lumber.
- Girth hitch three lengths of 1/2-inch tubular nylon at the center of each 4-inch by 4-inch piece of lumber.
- At each end of the platform, pass one end of the 1/2-inch tubular nylon underneath the 2-inch by 6-inch longitudinal stringers. Match the two ends together and tie an overhead knot close to the stringer.
- 5) Number the 1/2-inch tubular ties 1 through 7 and 1a through 7a.

Figure 4-4. Load Restraints Secured to Platform

POSITIONING HONEYCOMB STACKS

4-5. Prepare and position the honeycomb stacks as shown in Figure 4-5.



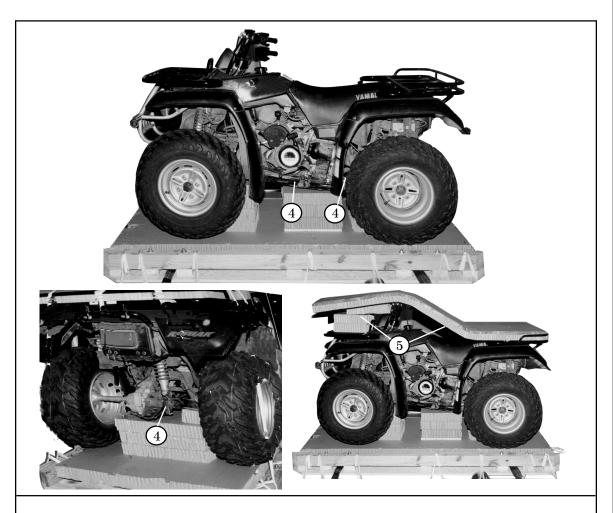
Note: Glue stacks 2, 3, and 4 to stack 1 (Base).

STACK NUMBER	PIECES	<u>WIDTH</u>	<u>LENGTH</u>	MATERIAL	INSTRUCTIONS
1	1	36	82	Honeycomb	See Figure 4-5.
2	4	14	18	Honeycomb	See Figure 4-5.
3	3 1	14 14	18 18	Honeycomb 3/4-inch Plywood	See Figure 4-5. Glue to bottom of stack 3.
4	3 1	14 4	18 18	Honeycomb Honeycomb	See Figure 4-5.

Figure 4-5. Honeycomb Protectors Prepared and Tied to Motorcycles

PREPARING AND POSITIONING QUAD-RUNNER

4-6. Prepare and position the quad-runner as shown in *Figure 4-6*.

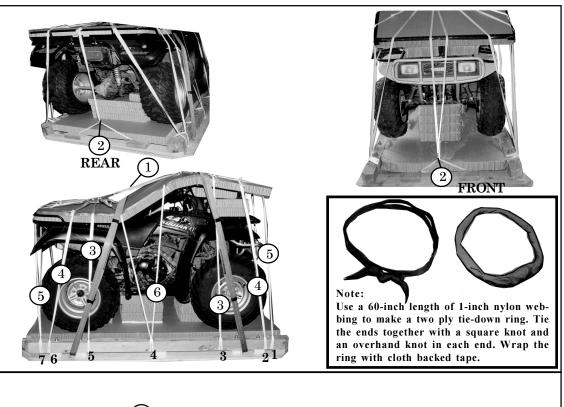


- 1) Ensure fuel is over half but no more than 3/4 full. (**Not shown**)
- 2 Secure key with type III cord safety tied to vehicle. (Not shown)
- (3) Place gear shift in neutral. (Not shown)
- Position vehicle onto honeycomb with the front skid plate centered on stack two. Center skid plate rest on stack three. Rest axle on stack four. Wheels should be at least 1 inch above bottom layer of honeycomb.
- Build up around the handlebars with honeycomb to prevent movement and to protect levers and switches. Lay a 36-inch by 78-inch piece of honeycomb, with edges taped, on top of the vehicle.

Figure 4-6. Quad-Runner Positioned

SECURING LOAD TO PLATFORM

4-7. Form and tape with cloth backed tape two tie-down rings, approximately 10 inches in diameter, with 1-inch tubular nylon webbing. **(see note)** Lay one ring on top of the honeycomb over the handlebars and the other ring over the seat. Secure the load to the platform as shown in *Figure 4-7*.



- 1 Tie the rings together with a 40 inch length of 1/2-inch tubular nylon webbing to keep them centered.
- 2) Tie the front and rear restraints of each end to the respective tiedown ring with a trucker's hitch knot.
- (3) Tie numbers 5 and 5a and 3 and 3a to the respective tie-down ring.
- 4 Tie numbers 6 and 6a and 2 and 2a to the respective tie-down ring.
- (5) Route numbers 7 and 7a and 1 and 1a around each end of the vehicle and up to the tie-down rings.
- 6 Using numbers 4 and 4a, split the tie and then tie one end to one tie-down ring and the other end to the other tie-down ring.

Figure 4-7. Quad-Runner Positioned

SECURING ACCOMPANYING LOAD

4-8. Whenever possible, the load should be kept balanced. One rucksack and one water or fuel can may be used to keep the load balanced as shown in *Figure 4-8*.

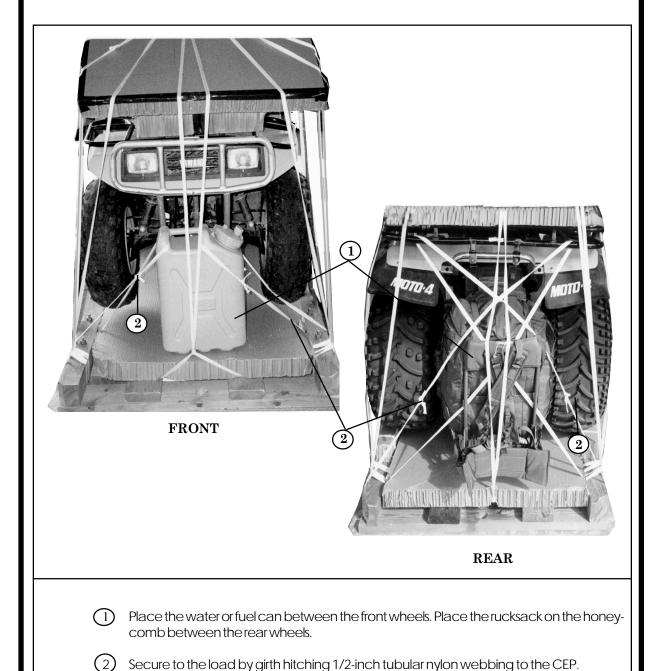


Figure 4-8. Accompanying Load Secured

SAFETYING SUSPENSION SLINGS

4-9. Lift and safety the suspension slings using a deadman's tie according to FM 10-500-2/TO 13C7-1-5 and as shown in Figure 4-9.

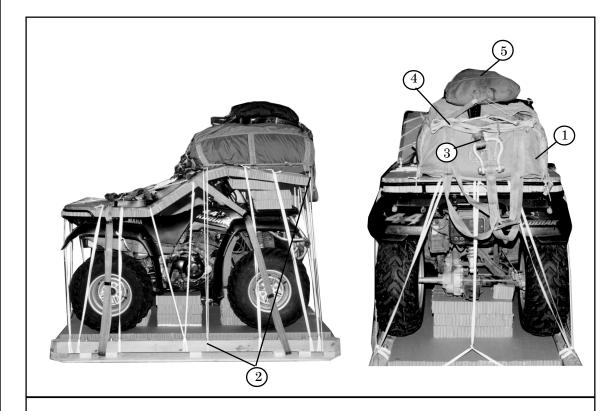


- (1) Safety the deadman's tie 6 to 8 inches above the highest point of the load.
- 2 Secure the suspension slings to the equipment rack with 1/4-inch cotton webbing.

Figure 4-9. Suspension Slings Safetied

STOWING CARGO PARACHUTE

4-10. Stow one G-12E cargo parachute as shown in *Figure 4-10*. Prepare and pack a 15-foot cargo extraction parachute as described in *Chapter 3, Paragraph 3-8*.

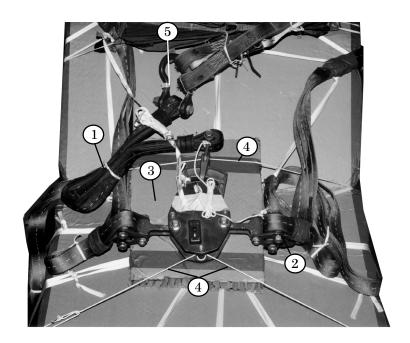


- 1 Place one G-12E cargo parachute on the front of the load with the riser extension compartment up and the deployment bag bridle to the front.
- 2 Secure the parachute to convenient points on the platform with four lengths of 1/4-inch cotton webbing.
- (3) Attach the deployment line (9-foot, 2-loopType XXVI nylon webbing sling) from the packed 15-foot extraction parachute to the G-12E bridle with a medium clevis.
- 4 S-fold the slack in the deployment line and secure the folds with 1/4-inch cotton webbing. Secure the medium clevis attached to the G-12E bridle to the riser extension tie-down loops with a single length of 1/4-inch cotton webbing. Place folds on top of the G-12E cargo parachute.
- (5) Center the 15-foot cargo extraction parachute on top of the G-12E cargo parachute. Secure to the G12E with four lengths of ticket number 8/7 cotton thread.

Figure 4-10. Parachute Stowed

INSTALLING PARACHUTE RELEASE

4-11. Prepare, install, and safety the M-1 release according to FM 10-500-2/TO 13C7-1-5 and as shown in Figure 4-11.

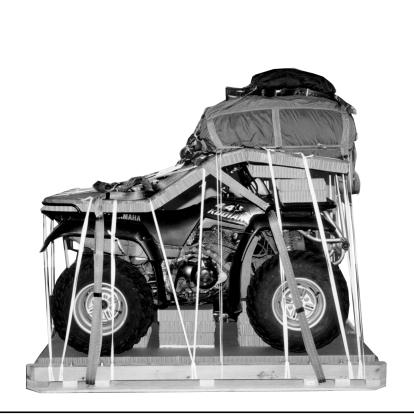


- Connect a 3-foot, 2-loop Type XXVI sling to the G-12E parachute riser clevis. Connect the other end of the sling to the parachute connector on the M-1 release. Fold and tie with 1/4-inch cotton webbing.
- (2) Connect the suspension slings to the M-1 release.
- 3 Cut and place a 14- by 14- inch piece of honeycomb on top of the load under the release.
- 4 Secure the M-1 release to the platform with Type III nylon cord.
- (5) Remove the left secondary bag closing tie from the G-12E parachute.

Figure 4-11. M-1 Parachute Release Installed

MARKING RIGGED LOAD

4-12. Mark the rigged load according to FM 10-500-2/TO 13C7-1-5 and as shown in Figure 4-12. If the accompanying load varies from the one shown, the weight, height, and CB must be recomputed. Complete the Shipper's Declaration for Dangerous Goods.



RIGGER LOAD DATA

Weight: Load Shown 960 pounds
Maximum Load Allowed 1200 pounds

Height 68 inches

Length 87 inches

Width 48 inches

Figure 4-12. Four Wheeled Quad-Runner Rigged on CEP for Low-velocity Airdrop

EQUIPMENT REQUIRED

4-13. The equipment needed to prepare and rig this load is listed in *Table 4-1*.

Table 4-1. Equipment Required for Rigging Quad-Runner for Low-Velocity Airdrop

National Stock Number	Item	Quantity	
8040-00-273-8713	Adhesive, paste, 1-gallon	As required	
1670-00-590-9909	*Bag, deployment, personnel parachute (T10)	1	
1670-00-568-0323	*Band, rubber, retainer	As required	
No NSN	Bolt, carriage, 3/8-inch diameter, 7-inch	1	
	long, w/washer and nut	8	
4030-00-678-8562	Clevis, assembly, suspension, cargo		
	(Medium)	2	
4020-00-240-2146	Cord, nylon, Type III, 550-lb	As required	
	Lumber:	-	
5510-00-220-6446	2- by 4- by 44-inch	5	
5510-00-220-6148	2- by 6- by 87-inch	2	
	2- by 6- by 44-inch	2	
5510-00-220-6274	4- by 4- by 87-inch	2	
5315-00-010-4659	Nail, steel wire, common, 8d	As required	
1670-00-753-3928	Pad, energy-dissipating honeycomb,		
	3- by 36- by 96-inch	5	
	36- by 82-inch	(2)	
	36- by 78-inch	(1)	
	14- by 18-inch	(10)	
	Parachute:		
1670-01-065-3755	Cargo, G-12E	1	
1670-01-063-3715	*Cargo, extraction, 15-foot	1	
5530-00-128-4981	Plywood:		
	3/4- by 48- by 87-inch	1	
	14- by 18-inch	1	
	Sling, cargo, airdrop, Type XXVI, nylon webbing:		
1670-01-062-6301	3-foot (2-loop)	1	
1670-01-062-6304	*9-foot (2-loop)	1	
1670-01-062-6302	20-foot (2-loop)	2	

^{*}These items are needed to pack the 15-foot cargo extraction parachute.

Table 4-1. Equipment Required for Rigging Quad-Runner for Low-Velocity Airdrop (Continued)

National Stock Number	Item	Quantity
1670-01-097-8816 8310-00-917-3945 7510-00-266-5016	Release, cargo parachute, M-1 Thread, cotton, number 8/7 cord Tape, adhesive, 2-inch (Cloth back) Webbing:	1 As required As required
8305-00-268-2411 8305-00-268-2453 8305-00-268-2455 8305-00-263-3591	Cotton, Type I, 1/4-inch Nylon, tubular, 1/2-inch, 1,000-lb Nylon, tubular, 1-inch Nylon, type VIII	As required As required As required As required
	J / J1	1

SECTION I I

RIGGING ONE FOUR WHEELED QUAD-RUNNER IN A DOUBLE A-22 CONTAINER

DESCRIPTION OF LOAD

4-14. The four wheeled quad-runner (QUAD) may also be rigged in a double A-22 container. The load is rigged on a 48-by 96-inch Combat Expendable Platform (CEP) with one G12-E cargo parachute. The load is rigged for a low velocity airdrop, using over the ramp or the Centerline Vertical Restraint system (CVR) from a C-130, C-141, or C-17 aircraft.

BUILDING AND PREPARING COMBAT-EXPENDABLE PLATFORM

4-15. Build and prepare the CEP as shown in *Paragraph 3-2, Pages 3-1 through 3-12*.

POSITIONING AND JOINING A-22 SLING ASSEMBLY

4-16. Position and join A-22 sling assembly as shown in Paragraph 3-3, Page 3-3.

POSITIONING A-22 CARGO COVERS

4-17. Position A-22 cargo cover as described in *Paragraph 3-4*, *Page 3-5*. (Use steps 1 and 2 only)

PREPARING AND POSITIONING HONEYCOMB

4-18. Prepare and position honeycomb as shown in Paragraph 4-5, Page 4-6.

Note: Stack number 1 dimensions are 36- by 96-inches for a quad rigged in an A-22 container.

PREPARING, POSITIONING AND PROTECTING QUAD

4-19. Prepare, position, and protect quad as shown in *Paragraph 4-6*, *Page 4-7*. **Note: Place a 36 by 82-inch piece of honeycomb on each side of the quad and secure with type III nylon cord.**

CLOSING CARGO BAGS

4-20. Close cargo bags as shown in Paragraph 3-6, Page 3-8.

ATTACHING SUSPENSION SLINGS

4-21. Attach suspension slings as shown in *Paragraph 3-7*, *Page 3-12*.

PACKING A 15-FOOT CARGO EXTRACTION PARACHUTE

4-22. Pack a 15-foot cargo extraction parachute as shown in *Paragraph 3-8, Page 3-13*.

PREPARING AND STOWING G-12E CARGO PARACHUTE AND 15-FOOT CARGO EXTRACTION PARACHUTE

4-23. Prepare and stow the G-12E cargo and 15-foot cargo extraction parachutes as described in Paragraph 3-9, Page 3-19.

EQUIPMENT REQUIRED

4-24. The equipment needed to prepare and rig this load is listed in Table 4-2.

Table 4-2. Equipment Required for Rigging Quad-Runner in an A-22 Container

National Stock Number	Item	Quantity	
8040-00-273-8713	Adhesive, paste, 1-gallon	As required	
1670-00-587-3421	A-22 cargo bag	2	
1670-00-568-0323	*Band, rubber, retainer	As required	
4030-00-678-8562	Clevis, assembly, suspension, cargo	4	
4020-00-240-2146	Cord, nylon, Type III, 550-lb Lumber:	As required	
5510-00-220-6148	2- by 6- by 42-inch	2	
	2- by 6- by 85-inch	2	
5315-00-010-4659	Nail, steel wire, common, 8d	As required	
	Parachute:		
1670-01-065-3755	Cargo, G-12E	1	
1670-01-063-3715	*Cargo, extraction, 15-foot	1	
5530-00-128-4981	Plywood:		
	3/4- by 48- by 96-inch	1	
	14- by 18-inch	1	
	Sling, cargo, airdrop, Type XXVI, nylon webbing:		
1670-01-062-6301	3-foot (2-loop)	2	
1670-01-062-6304	*9-foot (2-loop)	1	
7510-00-266-5016	Tape, adhesive, 2-inch (Cloth back)	As required	
8310-00-917-3945	Thread, cotton, number 8/7 cord Webbing:	As required	
8305-00-268-2411	Cotton, Type I, 1/4-inch	As required	
8530-00-268-2453	Nylon, tubular, 1/2-inch, 1,000-lb	As required	
8530-00-263-3591	Nylon, type VIII	As required	

^{*}These items are needed to pack the 15-foot cargo extraction parachute.

GLOSSARY

```
AD
             airdrop
    AFB
             Air Force base
AFJMAN
             Air Force Joint Manual
    AFJI
             Air Force Joint instruction
     AFI
             Air Force instruction
   AFTO
             Air Force technical order
    ALC
             Airlift Logistics Center
    attn
             attention
             change
       \mathbf{C}
      cap
             capacity
             combat expendable platform
     CEP
      CB
             center of balance
    chap
             chapter
             cubic centimeter
       \mathbf{cc}
    CVR
             Container Vertical Restraint System
       d
             penny
      \mathbf{D}\mathbf{A}
             Department of the Army
      \mathbf{DC}
             District of Columbia
      DD
             Department of Defense
    diam
             diameter
             figure
      fig
      FM
             field manual
             foot/feet
       \mathbf{ft}
             gallon
      gal
      HQ
             headquarters
       in
             inch
      JAI
             joint airdrop inspector
       lb
             pound
      LV
             low-velocity
  MCRP
             Marine Corps Reference Publication
      mm
             millimeter
    NSN
             national stock number
    OVE
             on-vehicular equipment
      TM
             technical manual
      TO
             technical order
TRADOC
             US Army Training and Doctrine Command
      US
             United States
             with
       \mathbf{w}
             yard
      yd
```

REFERENCES

- AR 59-4/AFJI 13-210. Joint Airdrop Inspection Records, Malfunction Investigations and Activity Reporting. 27 November 1984.
- *AFJMAN 24-204/TM 38-250. Preparing Hazardous Materials for Military Air Shipments. 25 November 1994.
- FM 10-500-2/TO 13C7-1-5. Airdrop of Supplies and Equipment: Rigging Airdrop Platforms. 1 November 1990.
- FM 10-500-3/TO 13C7-1-11. Airdrop of Supplies and Equipment: Rigging Containers 8 December 1992.
- TM 10-1670-278-23&P/TO 13C5-26-2/NAVAIR 13-1-27/TM 01109C-23&P/1. Unit and Intermediate DS Maintenance Manual Including Repair Parts and Special Tools List for Parachute, Cargo Type, 15-ft Diam, Cargo Extraction. 6 November 1989.
- TM 10-1670-281-23&P/TO 13C5-32-2/NAVAIR 13-1-32. Unit and Intermediate Direct Soupport (DS) Maintenance Manual (Including Repair Parts and Special Tools List) for Parachute, Cargo Type: 64 Foot Diameter, Model G-12D, (NSN 1760-00-893-2371) and Model G-12E (1670-01-065-3755). 1 October 1990.
- TM 10-1670-298-20&P. Unit Maintenace Manual Including Repair Parts and Special Tools List for Container Delivery System A-7A Cargo Sling (1670-00-251-1153) A-21 Aerial Delivery Cargo Bag (1670-00-242-9173), A-22 Aerial Delivery Cargo Bag (1670-01-065-3748), Capsule, Cargo, CTU-2A (1670-01-059-5788), Strap Connector, 60-Inches Long (5340-00-738-5878), Strap Connector, 120-Inches Long (5340-00-738-5879). 15 September 1995.
- AFTO Form 22. Technical Order Publication Improvement Report
- DA Form 2028. Recommended Changes to Publication and Blank Forms. February 1974.
- * Shipper's Declaration for Dangerous Goods. Locally procured form
- *AFJMAN24-204/TM 38-250 has superseded AFR 71-4/TM 38-250 (15 January 1988). This revision reflects this change.
- * Shipper's Declaration for Dangerous Goods has superseded DD Form 1387-2 (February 1982.) This revision reflects this change.

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By Order of the Secretary of the Army:

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